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THE CANADA GOOSE IN YELLOWSTONE NATIONAL PARK

BY M. P. SKINNER

WITH FRONTISPIECE BY GEORGE MIKSCH SUTTON

Dr. C. Hart Merriam, serving as ornithologist of the Snake River division of Hayden's Geological Survey of Montana, Idaho, Wyoming and Utah, mentions Canada Geese (*Branta canadensis canadensis*). A few were seen in August of 1872 in the Firehole Basin of the Yellowstone National Park. This was the first definite record of this species there; later, almost every scientist and visitor interested in birds, noted geese. P. W. Norris, then superintendent of the Park, reported in 1881 that these geese were abundant and that they "hatched their young in vast numbers," especially at the south end of Yellowstone Lake. In 1898, Capt. James B. Erwin, then acting superintendent, thought probable that some Canada Geese remained in the Park all winter. Dan Beard wrote in 1901 of their extreme tameness. In spite of these early notices that Canada Geese were present, no prolonged or more definite studies of their lives have ever been made. Including every reference that I can find on this bird in the Yellowstone Park, all the material published before this, including two pages written by myself, would cover only about three pages of the WILSON BULLETIN. Most of this material is widely scattered, consisting, as it usually does, of but a mere mention, or not more than two or three sentences together in any one place.

The Yellowstone National Park is a high, mountainous area about sixty-two miles north and south, by fifty-five miles east and west. Included in this area are hills and valleys, broad plateaus, and mountains extending up to 11,125 feet above sea-level. Being elevated, even its lowest altitude is over 5300 feet (or just a little over a mile) above sea-level. Not only is it diversified in altitude, but its features are varied. They include open, grassy meadows; rugged, rocky hills; desert areas covered only by sage-brush; delightful valleys and hills whose carpet of green grass and herbage is dotted here and there by groves of trees; and rolling hills and plateaus covered by

dark, somber, coniferous forests stretching away as far as the eye can see.

The lowest elevations are treeless, except along the larger streams. Perhaps a little of this area is in the Upper Sonoran Zone. Possibly Canada Geese do not nest, because there are no suitable places, in the Upper Sonoran Zone inside the Park, but other Canadas nest below the Park in what is unquestionably Sonoran. Inside Yellowstone Park, some Canada Geese breed in the Transition Zone, but many more have their nests in the much larger Canadian Zone. Presumably the great number of ponds, marshes, and lakes in the Canadian Zone attracts many geese there that might otherwise nest lower, in the Transition. I have never found a Canada Goose nest in the Hudsonian Zone in the Park, but there are really very few suitable localities there.

Such an elevated region as the Park, naturally attracts and catches moisture that falls as rain and snow and sinks into the ground, or flows off in a myriad of small streams eventually uniting into several larger rivers that rush away in all directions. The Madison River dashes west until it swings to the north to form the head of the Missouri River; the Yellowstone River runs north through the Park until it changes its course to northeast and later becomes the main tributary of the Missouri River; various mountain streams flow east to fall into, and largely make up, the Bighorn River; and the Snake River surges south and later swings west and north to become a big part of the mighty Columbia River. In fact, the elevated Yellowstone region is the fountain head of many important rivers of the United States. In addition to those already mentioned, another large river (the Colorado) rises a few miles south of the man-made southern boundary and flows south into the head of the Gulf of California.

What wonder, then, that this generous rainfall not only causes an elaborate, interlacing system of running streams, but also forms a multitude of small ponds and larger lakes! Of these, Yellowstone Lake is the largest, covering an area of 140 square miles. If this Lake had a compact, regular shape, its shoreline would be only about forty miles in length. But it is actually so irregular, and has so many islands, inlets and sheltered bays, that its shoreline is really more than one hundred miles in length. Those islands, crooked inlets, and cloistered, sheltered bays are beloved by the Canada Geese and probably afford the reason that so many of these birds live there.

But this big lake is not the preferred home of most of the Yellowstone geese. By far the larger proportion live on other, and smaller,

members of the intricate surface-water system. Scattered throughout this well-watered wilderness of thousands of square miles, the Canada Geese find many small, secluded lakes and water courses near which they like to nest and raise their youngsters. They are found almost everywhere in the Park where there is water; on marshes, sloughs, ponds, lakes, streams, and meadows. They are fond of resting, both day and night, on the sand and gravel bars, the points, and the beaches of Yellowstone Lake and the larger rivers; and also on the mud bars, points, and flats extending down into the water until they may be actually covered. On cold days the geese seek shelter under protecting banks, or bask in the comparatively hot sunrays of these high altitudes, on gravel and sand bars, often going to sleep while doing so.

These big birds really seem to like to be with their fellows, and when the work of raising their young is over, they are almost always in small flocks. Usually these are family parties, but quite frequently these smaller groups unite into larger flocks. Canada Geese never fail to astonish the visitors to the Park, especially those that already know them. Elsewhere, geese are considered the essence of wildness; in the Yellowstone, under absolute protection, they are the most readily tamed of all birds. Elsewhere, shot at and harried until they are the wildest and wariest of birds; here, they are tame and fearless to a truly astonishing degree. It really seems as if the wisdom and sagacity that makes them so difficult to outwit where man is their enemy, leads them to realize the quickest, that here in the Yellowstone, man protects them and wants to make friends with them. Certainly, they are tamer than most of the ducks. In a way, this only bears out similar observations elsewhere. For, wherever we give birds, or other animals, a chance to be friendly with us, they always take advantage of it. And always, it is the wisest and the wariest that realize quickest where there is sanctuary for them.

Still, with all their trusting, friendly ways, these Park Canada Geese do not want man to become too familiar with them. They do not mistrust bird-lovers, but, on the other hand, they do not like to be pursued. When a pursuer is in a boat, the geese are apt to fly away, or go ashore, when too closely approached; but if the disturber is on shore, they fly out on the water, or often cross the water and climb the opposite bank. When they decide to escape by stream, geese are wise enough to let the current carry them downstream, instead of attempting to escape by swimming upstream, and losing time battling the current, as so many ducks are apt to do.

When Canada Geese are really alarmed, they begin their loud, clarion cries, warning all others within hearing and finally flying swiftly away, honking loudly as they go. In fact they keep up their alarum until they are satisfied that all is again safe. When they come in to alight, they often fly to and fro to see if their intended landing place is free of enemies. If alighting on a small pond or lake, they may circle again and again over it until they have given their sharp eyes ample time to survey the waters and the shore below.

Sometimes, Canada Geese, especially if they think they have been unobserved, try to escape discovery by lying low with head and neck outstretched upon the ground or along the surface of the water. If on a stony beach, the birds look like dull gray cobble stones and the deception is perfect; if upon the water, the birds look like dead bodies idly rocking on the waves; but if they are on green grass, the geese's acuteness plays them false, for their color is then contrasted with the green and they are very conspicuous. They will sometimes crouch in this way for an hour, never moving more than perhaps an eyelid until the intruder is a hundred yards away. Then the heads are slowly lifted, followed by the necks, and finally the birds rise to their feet again. I have even seen some Canada Geese carry this farther by swimming the Yellowstone River with heads and necks outstretched along the surface; and again I have seen them try to sneak off through the grass in the same way. These subterfuges are used more in the spring than in summer, but are practiced sometimes in September and October. Quite often a brooding bird on her nest, will seek to escape being seen by stretching her head and neck down along the sides of the nest, and, when she does so, she gives herself a most un-goose-like appearance.

Canada Geese are often seen with other birds such as: Mallards (*Anas platyrhynchos*), Green-winged Teal (*Nettion carolinense*), Cinnamon Teal (*Querquedula cyanoptera*), Baldpates (*Mareca americana*), Pintails (*Dafila acuta tzitzihoa*), Canvas-backs (*Marila valisineria*), Redheads (*Marila americana*), Barrow's Golden-eyes (*Glaucionetta islandica*), Mergansers (*Mergus americanus*), Whistling Swans (*Cygnus columbianus*), Grebes (*Colymbus nigricollis californicus* and *Colymbus auritus*), Coots (*Fulica americana*), White Pelicans (*Pelecanus erythrorhynchos*), and California Gulls (*Larus californicus*). The geese and most of the ducks really appear to like to be with each other more than the ducks do with other species of ducks. I know I have often observed these geese with many different species of ducks on days when it was impossible to find two or more species

of ducks together. The association of geese with grebes, coots, pelicans and gulls seems characterized more by indifference and tolerance on the part of the geese toward these other birds, probably present because of a liking for similar food, or similar habitat.

These big Canada Geese are so wary and difficult to catch that they outwit most of their enemies. Because outwitting them is such a task, the bears and most other of the carnivorous animals let the adult geese alone. But coyotes, mink and skunks get a few of the goslings at times. Geese, even young ones, show no fear of even the

Canada Geese on the Yellowstone River

biggest of the hawks flying over, or near them. I have seen the great Golden Eagles swoop at geese, but never saw them catch or kill one. Even the coyotes, wisest of all mammals, seldom undertake the task of catching an adult goose, much as they would like good, fat ones. And yet, I was once very much amused to see a coyote try to stalk a small flock of full-grown birds. He must have been either very young, or else somewhat simple-minded. The geese were perfectly aware of what was going on, and might well have chuckled to themselves as each long, cautious crawl of the coyote found them just a little farther away and entirely too far from cover to warrant a rush. But the coyote was persistent and the geese apparently had nothing better to do than to amuse him. Two or three hours passed in labo-

rious efforts, and perhaps much canine swearing, that were all equally unfruitful. At last, patience gave way in one mad rush across the beach, only to have the exasperatingly calm geese enter the river and swim away about two jumps ahead.

They fly well, but being heavy birds, Canada Geese are compelled to rise against the wind. On the land, they run a few steps before they can rise: on the water, they kick the water behind them for the first few wing strokes; but on a bank, they can jump out and down to obtain the necessary starting speed. Although the start seems so laborious, once the geese are in the air, their flight is strong and powerful. As a rule, they fly some distance above the surface of the land or water, but occasionally I have seen them flying across the broad expanse of Yellowstone Lake, just skimming the water.

"Honking" by Canada Geese may denote alarm, greeting, or anxious seeking of a mate. It may even seem at times like the mere sociable calling of one bird to another. According to the mood of the hearer, Canada Geese may be either very noisy or sweetly musical. When the hearer is tired, the honking of an old gander awakening down on the meadow at three o'clock dawn, is just plain "noise"; but when the honking is of distant, migrating birds at the end of a long and dreary winter, it is a "welcome, musical, harbinger of spring". Once, when I was battling in a small boat on Yellowstone Lake with a fierce snow squall that threatened to engulf me, I thought the honking of the geese revealing my previously unseen landing place, the finest, as well as the most welcome, of musical sounds.

While the great majority of Yellowstone geese spend only the summer there, quite a few remain all winter upon waters kept open by swift current, and even more upon the waters freed from ice by hot water from the hot springs and geysers. It seems very wonderful, where the temperature of the air often goes far below zero, that there should be natural hot water enough to keep even such large streams as the Madison, Snake, and Yellowstone Rivers free from ice. But such is actually the case, and many Canada Geese remain all winter to take advantage of these open waters. There are even a number of meadows so underlaid by warm springs that the snow is melted, and even a little green grass grows there all winter, to be greedily devoured by the geese that relish the unexpected, because unseasonable, treat! The migrating birds commence to arrive in April with the first thawing of the snow, increase rapidly in numbers until May fifteenth, and then gradually decrease during the next thirty days. During the time they are present the meadows are alive with Canada

Geese and the air resounds with their silvery "honk-ah-honk". Then those geese that go north, depart, and only the birds that breed in the Park remain behind. But even so, Canada Geese are fairly numerous throughout the summer, for probably as many as four hundred pairs nest each year within the limits of the Yellowstone National Park. The return migration from the north begins to arrive very regularly about September tenth, reaches its height forty days later, about the time the smaller lakes freeze, and then declines. The winter residential number of Canada Geese is about two hundred, although varying widely in different years.

Canada Geese Picking Gravel on the Yellowstone River

The Canada Geese that arrive in spring, often get there so early that few of the ponds are open. Indeed, I have actually seen geese on the frozen surfaces seemingly waiting for them to open! Before the ice, itself, melts, the snow water comes rushing down on the still frozen ponds and gives the earliest wildfowl a bit of their chosen element. They do not stay long on these first waters, but move to the next to open, and repeat, so that they are most numerous on ponds where water is just appearing. It is interesting to see the geese climb up on the rotting ice. Generally they fly, but occasionally one *swims up* by forcing itself forward over the breaking, mushy edges until its breast finally slides up on the still firm part of the ice. After the

mating season that follows, is over, the pairs scatter to their chosen homes. In September the geese begin gathering again on the larger waters, to remain until the gradual advance of heavy frost drives them south once more.

Canada Geese eat a variety of foods and, naturally, have a variety of ways of getting it. In April, the streams and ponds swollen by melting snow are covered with many delectable seeds and early insects. In May, the meadows furnish a rich feast of fresh grass and grasshoppers. Here, the geese, both adult and young, stay all day at first, but later come every evening to feed, and then leave after dark, for they prefer to seek the safety of open water for the night. Geese are great eaters of grasses and of the roots of grasses. In fact, grass is one of their chief articles of diet when it is to be had green, but they also eat many seeds and much small grain. They can exist on a vegetable diet, but in summer, they eat a great many insects also, as well as other animal food (I have even found them far away from water, out in the sage-brush, hunting locusts), changing again to vegetable food as autumn advances. During the latter season they feed on the water, "tipping" very much as Mallards do, or merely swimming along where the growth of water plants is near the surface, with their heads and necks underneath, gleaning what they can reach as they go. In May, and still more in the fall, they seek out the main traveled roads for gravel, and sometimes for spilled oats. In October, they dabble in springs, apparently for the small, tender plants that grow there. After eating, Canada Geese are apt to fly to some sand, or gravel, bar to preen and bask in the warm sunlight. Sometimes they take a bath before preening. This they do in the warm, shallow water at the edges of sand bars or flats, making a great splashing with their fluttering wings.

What would pass for courtship with other birds, occupies most of April; but geese are believed to mate for life. Still, the young, unmated birds each year outnumber the older, mated birds, especially as the young birds do not usually mate until they are two or three years old. So there is actually a great deal of courting each spring. And perhaps even the older pairs renew their youthful courting at each recurrence of the magic season. Certainly, at this season, all the Canada Geese are very uneasy and noisy, but by the time nesting begins, they all quiet down once more.

The paired geese appear rather particular (from their point of view) about their nest sites, and do considerable searching before selecting a spot. But after they have made a selection, they may, and

usually do, return to it year after year. They may decide on a place that seems very prominent indeed. Low elevations, such as the tops of muskrat houses, and especially beaver lodges, are preferred; but sometimes the top of a boulder, particularly if the base is surrounded by water, is chosen. For several years, there were a pair of geese nesting on the top of a bare and prominent boulder in Gibbon Canyon, and only a few feet from the heavy traffic that flowed so steadily over the loop roads of the Park. More rarely, an old osprey or hawk nest is occupied. If nothing better is found, a pile of dirt or mud, if surrounded with water, will do. The word "nest" is rather a misnomer; usually the geese utilize whatever grass and trash may be on the nest site already, although they almost always add down from their breasts. Nesting time is irregular, the first of the four to seven pale green eggs being laid during the last of April, in May, or even in early June. The gander usually stays near his mate to help defend the nest, and is capable of striking powerful blows.

The goslings are hatched in May, or during the first half of June. When they leave the eggs, they are covered with soft yellow down. They remain in the nest only until they are dry and then leave it forever. All through their callow days they retain their natal yellow down, but they are expert swimmers even then. I have seen them on Yellowstone Lake in quite stormy waves, when only two weeks old, bravely swimming in a line exactly following their parent-leader. Both parents take care of the youngsters, often leading them through the meadows. While their feet are not well adapted to walking on land, the goslings can walk and run quite rapidly; but not fast enough to evade their enemy, the coyote, that no doubt catches many before they can fly. Goslings are not fully grown and able to take care of themselves until two months old. Even after that, the whole family stays together, usually until the following spring.

After the young are a month old, the parents begin to molt. At this time, the ganders resort in large flocks to small undisturbed lakes, where they remain three or four weeks, until about July twenty-fifth, when their new flight feathers are strong enough to bear them back to their mates and little ones that have stayed together, for the female molt is not as severe as the ganders'.

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Jamestown, N. Y.

BOB-WHITE AND SCARCITY OF POTATO BEETLES

BY E. L. MOSELEY

For more than ten years Ohio has protected Bob-white with a closed season, and a great increase in the numbers of these birds may be seen. If we may judge the abundance of the birds by the frequency with which they are observed by human eyes, we would say that Bob-white is now fully twenty times as numerous as when there was an open season. These birds have, however, not only multiplied, but have become so tame that they do not take the trouble to keep out of sight. The apparent increase may be due, therefore, as much to their tameness as to their actual increase. Students in my classes have come to the State Normal College from all counties of northwestern Ohio, and also from other parts of the State. Not one among them knew of any county where the Bob-white had failed to increase in recent years. Most of them would not attempt to estimate the extent of increase: some thought tenfold, others two, three, or fourfold.

For several years past potatoes have been raised successfully on many farms in Ohio without spraying for beetles, or taking any measures to combat the insects. In fact many patches have been practically free from the "bugs." I have never known of the potato grower being so fortunate in previous years. For more than half a century the Colorado potato beetle has been a very serious pest wherever potatoes were raised. Why it should disappear I could not explain. I had wondered if ladybirds, which fed upon the eggs of this beetle, had multiplied; or if some other enemy was holding it in check. The Rose-breasted Grosbeak is so uncommon here that few people ever see one. A captive mole which I fed for some time would not eat potato beetles, either larvae or adults. These insects are not relished by all the birds and mammals that greedily devour white grubs and grasshoppers.